How the Planets Came into Being

The Esoteric History of the Earth
By WILLIAM DUDLEY PELLEY



The Fifth of
The GALAHAD LECTURES

"How the Planets Came into Being"

BEING THE FIFTH OF

The Galahad Lectures

THE GALAHAD LECTURES constitute a great curriculum of information on the Unknown Esoteric History of the Earth, from the time of its conception as a planet, up through the Edenic period when the first forms of human life existed under the Great Water-Veil, into the Antediluvian world with its strange civilizations, and through the Atlantean and Egyptian epochs into the modern Christian. ¶ These Scripts comprise the Instruction given as part of the Lecture Courses of Galahad College Summer School held in Asheville, N. C., in the summer of 1932 and have been recorded and preserved in this form for students of the Foundation Fellowship. ¶ The Foundation Fellowship is a nation-wide assembly of Metaphysical Students, sacredly searching for the true fundamentals behind life in Mortality and for accurate knowledge of the soul's enhancements in octaves higher than those of earth.

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FIFTH LECTURE

STRANGE is the fact that despite the living of every human being under the starry skies every night throughout his earthly tenure, less is known by the average person about the firmament and its stellar inhabitants than any other natural mystery coming beneath his observation. The stars are simply tacked up there in the sky. The sun and the moon are taken for granted. If a comet comes zooming into our planetary neighborhood, the world's populace is properly terrified. Will it strike the earth or will it not, and if it should strike the earth, what would happen? The heavens, so to speak, are an open book that is seen but never read. Of course most people know how to locate the North Star from the Big Dipper, and they accredit that the Pleiades are supposed to exert a "sweet" influence. Three out of five persons can find the Pleiades, but the other two out of five don't know whether the word describes an ancient goddess or a new brand of rayon hosiery. That some stars are farther away than others, is generally conceded, but after all, what difference does it make? All of it goes to indicate that people in the main are far more interested in the immediate results in self-awareness received from their planetary habitat than they are in the colossal system that gives them an arena for formal life at all. ⸿ Now every person, no matter what his age, should have a fair working knowledge of Astronomy. That is to say, he should be in possession of the simple fundamentals of what the celestial universe is like, how big it is, what peculiar happenings are constantly occurring in

interstellar space, and how these billiard-ball stars, suns, planets, and satellites came to be formed, furnished performance-stages for trillions upon trillions of Spirit Particles not much removed in essence from ourselves. Likewise, there are a lot of things about the universe that he should "unlearn." One of these concerns the mechanical side of Astronomy. Thousands of people hold the notion that as Science manufactures bigger and bigger telescopes, the vaster and wider is to become mankind's knowledge of the number and size of the heavenly bodies. That, however, is untrue. The greater the size of the telescopes that are made, the more restricted is the area each can cover. Give a moment's thought to it, and you will understand why. The bigger the telescope, the longer its range; but by the same token, the bigger the telescope, the smaller is going to be the field of its vision. Take the moon, for instance. We may point a four-inch telescope at it and see it in its full symmetry. But immediately we begin to make our telescopic lens larger, the nearer the moon is going to be brought. Instead of the whole moon, the telescope moves up closer into our view only a limited section of its surface. In the exact ratio that the moon is moved nearer, the plainer will become the lunar terrain. But instead of seeing the whole moon, or a section of the moon, we're only going to view some particular neighborhood on the moon or examine the specific crater of some particular mountain. It is possible in the course of time, with telescopes growing larger and larger, that we might even be able to count the cobblestones on six square feet of lunar surface. But the moon as a moon will have ceased to exist. What will exist for our telescopic observation will be minute features of its surface.

¶ What is true of the moon in such respect, therefore, is true of the whole starry universe. The bigger the telescope, the fewer the stars to come into range of its two-dimensional power, but the greater will be the detail of those stars so appearing. And the strange part about it is, that no matter where in the universe you point a telescope—of any size—there, obstructing your range of vision, will be a celestial body. There is only one place in the skies of either hemisphere where this does not hold. Off in the southeastern heavens, there is a space that is called "the Pocket." Within the Pocket nothing but eternal blackness is apparent. But knowing what we do about the rest of the universe, it is doubtful if this means that there is a vacancy of heavenly bodies in that spot. What we the more correctly are looking at, is undoubtedly some vast planetary body that neither originates nor reflects the slightest incandescence.

NOW first of all, how big is the universe?

Naturally, ordinary standards of measurement will not suffice. When we get up into terrific distances, to measure in miles becomes incomprehensible. Take the sun, for instance. We say in common parlance that it is between 92 and 93 million miles from the earth. To try to represent that distance in miles we say that it is equal to one of our fastest express trains' traveling night and day for 250 years to cover that distance. So man takes as his measuring-stick the distance that light will travel in one second of time.

Light travels at a rate of 186,000 miles per second. So it requires something like 500 seconds for the light from the sun to arrive through sheer Space and strike our earth. In other words, we get the light from the sun in a trifle less than nine minutes after it leaves Old Sol on its journey toward us.

Now with that illustration, hold your breath and consider this: Some of the star-suns of the cluster in Hercules are 36,000 light years away —or the distance that light must travel at 186,000 miles per second for 36,000 years. But we have only begun to consider celestial distance.

The most remote of the globular clusters in the Milky Way, known to astronomers as NGC 7006—NGC standing for New General Catalogue of Nebulae as compiled by Dreyer—places 7006 as more than 200,000 light-years away.

To make this clearer, the light that reaches us now from NGC 7006 left that cluster 200,000 years bygone. If the cluster had burned out —that is, ceased to throw out light—100,000 years ago, earthly eyes would still see it for 100,000 years in future, granted of course that they existed that long.

The naked eye, in northern or southern hemispheres, can count between 5,000 and 6,000 of stars, suns, or planets. Each increase in the size of telescope lenses multiples the number to almost fabulous proportions—although, as I said—requiring more pointing about the heavens to detect them. Present optical instruments can observe between four hundred million and five hundred million—in other words, HALF A BILLION—and constant improvements in photography are gradually raising that number to a billion. And if you want to realize how many a billion is, consider this: That if the mythical Adam, supposed by the Fundamentalists to have existed some four thousand years ago, had started to count as fast as he could work his tongue—

"One-two-three-four-five-six-seven!"—he could not have counted a billion even had he lived to the present moment.

And yet, to a degree, the universe IS measurable, in that we know there is a greater density of celestial bodies in one direction than in another, and furthermore that the whole stupendous array of heavenly bodies is divided into two groups that have a peculiar movement in respect to one another. The fact that interstellar Space has more heavenly bodies in one direction than in another, permits of the conclusion—according to an observation of these densities—that the galactic system has the general shape of a Waltham watch. As regards the two master groups into which the suns and nebulae are divided, we find them oscillating in the heavens, swinging back and forth so to speak, one division penetrating the other and each moving through the vast interstices of Space that exist in the other. What causes such oscillation, scientists of course have not the faintest notion.

Now the Bigness of the universe, as we saw in our last discourse, is unimportant and means almost nothing, because Bigness and Smallness are forever relative. The old saying: "If you want to see how big you are, lie down beside a puppy; if you want to see how small you are, lie down beside an elephant," applies with particular force to any consideration of the galactic system. We get the word galactic, by the way, from "galaxy" or series of star-bands encircling the heavens, called the Milky Way.

All these heavenly bodies are big or small, according as we attempt to compare them with the earth or Old Sol. They are near or far away according as we think of the size of our physical selves and how long it takes us to propel our bodies one mile on two legs.

It is a strange faculty of Man, however, attesting to his essential spirituality—or essence in Spirit—that his Mind or consciousness knows neither time nor space. He can consider a million years bygone or a million years in future, and know what is meant. He can consider a billion light-years and by comparisons begin to grasp whether a distance is short or long—or a given star-sun "close" or "remote." That he can perform these mental miracles discloses that he is competent to penetrate to any point in the universe; only enhousement in his body keeps him a creature of earth.

So size is a matter of measuring sticks. And the most convenient measuring stick by which we may briefly survey the universe, is first the mass and distance of the sun in relation to earth, then the mass and

distance of some of the closer stars, then the mass and distance of the major stars and constellations.

First, as regards the earth and Old Sol.

IT STAGGERS the average mind, accustomed to seeing the sun rise every morning and set every evening since babyhood, to be told the most elemental facts about the sun, of which our earth is but the third satellite. In the first place, when we walk forth in the middle of a pleasant afternoon and view the sun in the high western heavens, the thing that we truly are looking at, is our nearest star to earth, relatively close at hand.

The sun is only a star close at hand! But just how close is it? I've already made mention of the express train that would require 250 years moving at better than 60 miles per hour, to cover the distance which light traverses in nine minutes. But consider Sound. If someone shot off a cannon cracker on the sun and the resultant noise were loud enough to travel as far as Earth, it would take 14 years—reckoning in terrestrial atmospheric velocity—for the noise to be heard by ears on the earth.

If a cannon ball, or 14-inch shell were to be shot from some gigantic gun on the sun, and hurled through space at the gun-rate of 1700 feet per second—about a third of a mile—that cannon ball or shell would require nine years to strike our planet.

Now how big is the sun in comparison with earth?

I said in my previous discourse that if we wanted to consider relative mass to distance, we might call the sun an orange and the earth a pea, placed 40 feet away. Even so, a pea would be relatively large. One little ball of buckshot would be the more accurate comparison. To get our ratios the better adjusted, consider this—

Suppose we say that the sun is a sphere two feet in diameter, or about the size of the ordinary geographer's globe mounted on a standard in any scholar's study. Perhaps you own such a globe at this minute. Very good. Then consider that the earth in relation to it would be as a small boy's ordinary clay marble 220 feet from it, while the distance of the nearest fixed star in this scale would be approximately 8,000 miles—or the actual diameter of the earth on which we live.

In other words, the diameter of the sun is 110 times as great as that of earth—it being 866,500 miles from surface to surface directly through its heart—while considered relatively as to mass, the sun is

332,000 times that of earth. Its density, however, is only a little over a quarter that of the earth's, or about 1.41 times as heavy as water. It is well to keep this in mind in thinking of the probable physical condition of the sun, when we remember that it is mainly composed of iron.

The attraction of the sun at its surface is about 27.6 times that of the earth at its exterior, so that a 200-pound man would weigh about 5520 pounds on the sun, and a body would fall there at a rate of 444 feet per second, instead of 16 as here. A pendulum which marks seconds here would oscillate more than five times per second upon Old Sol.

How is the vast heat of the sun kept up? The scientist's most generally accepted hypothesis is the contraction of the sun's huge mass upon itself—in other words, its shrinkage—which generates heat through internal pressure. Yet so slow is this rate of shrinkage that centuries must pass before the most delicate of instruments can detect the slightest change.

If the shrinkage or contraction theory be correct, the sun is probably from 20 million to 50 million years old—and doubtless the latter figure is nearer the truth than the former. If the same contraction should continue, the sun would take the next five million years to shrink to one-half its present diameter.

THE INNER core of the sun seems to be composed of gases. At the intense heat that prevails upon the sun by comparison with earthly temperatures, and being in a state of such compression, they have the consistency of melted tar or pitch. ¶ The luminous surface of the sun directly visible in telescopes is called the Photosphere, from the Greek word "phos" meaning "bright" . . . it is probably a sheet of luminous clouds formed by the condensation of substances which exist as gases in the hotter central mass of the sun. Under a moderate magnifying power it looks like rough drawing-paper. Under higher lenses, it looks like snowflakes scattered over gray cloth. These flakes, or grains, are from 400 to 600 miles across. Of sun spots and faculae I shall have more to say later.

Next above the photosphere comes a stratum of unknown thickness, discovered by Professor Young, containing the vapors of many of our terrestrial elements. It is called Young's Reversing Layer. Above the Reversing Layer and interpenetrating it, is an atmosphere of

permanent gases called the Chromosphere. Hydrogen is the most predominant among these gases, and out of this Chromosphere rise the wonderful protuberances which form so prominent a feature of the sun's surroundings at the time of a total eclipse.

Surrounding all other parts of the solar surface is the halo of light called the Corona—which is only visible at the time of a total eclipse. Though recognized from earliest times, little is known of its cause or physical condition. Down near the surface it is very bright and of a pearly-greenish color. Above this it rises, especially at the poles, in short and finely clustered filaments. Over the sun-spot zones it generally rises higher in broad streaks. Up in the clear air of Pike's Peak, Colorado, in 1878, these streamers were seen extending at least 9,000,000 miles into Space from the sun.

Here, then, is a star so close at hand that we can examine the most minute portions of its surface and its composition. Thereby do we know much of the surface and composition of the other star-suns in the celestial universe.

NOW when a smaller and non-incandescent body is pulled into a regular orbit around such a star-sun, we label it a Planet. We label it a Planet from the word Plane—or because it has a plane on which it travels. ℂ Another of the popular notions which it would be well for us to un-learn concerning planets—and particularly our own planet Earth—is that it was birthed by the sun by being hurled out of it when the sun was revolving at a much faster rate than at present. If such a theory were true, it would have to follow that the planet that is farthest from Old Sol!—Neptune—would have been cast off first, then in reverse order: Uranus, Saturn, Jupiter, Mars, Earth, Venus, and Mercury. Neptune would have cooled down first, and contracted, but this contraction should have made heat again and prevented it from becoming a solid. The Earth therefore, even today, should be much colder—or hotter by contraction—than Mars. All the planets should have been hurled off in the same way, in the same direction, and their speeds of rotation correspondingly reduced, one from the other. Furthermore, for the theory to hold, the moon-satellites of each of these planets, cast off in the same way, should all be proceeding in the same directions and at corresponding rates. But nothing of the sort is so. While the planets bear a fixed ratio to one another in the item of spacing, or distances between them, their tem-

peratures and physical features are all different, and Mars, Earth, and Venus are approximately the same size.

A French physician by the name of Lescarbault, gave it out in 1859 that he had discovered a planet even closer to the sun than Mercury, and named it Vulcan. But no astronomer has been able to see it since, and today it is regarded as more or less of a myth.

Mercury is an elusive body that few among astronomers have ever seen. It is not very bright, moves rapidly, and appears so close to the sun—rising and setting with it—that it can scarcely be distinguished. It is believed that it always presents the same face to the sun, as the moon always presents the same face to the earth. Its atmosphere, if it has any, must be so thin as barely to be termed an atmosphere at all. It is 36,000,000 miles from the sun and moves most swiftly of all the solar satellites.

Venus is the brightest of all the planets. Mistakenly, most of us identify it as the Evening or Morning "Star." Because it travels inside the orbit of the earth, it rises and sets with the sun. It is 67,000,000 miles from the sun and comes within 26,000,000 miles of the earth. Its atmosphere is denser than ours, and there is only 220 miles difference between its diameter and our own. The diameter of the earth is 7,920 miles while the diameter of Venus is 7,700. But it goes around the sun in only seven and one-half of our months—or 225 days. It has no moon, although the planet itself goes through all the aspects of the moon—full, quarters and new moon.

On our planet Earth, I need waste no time. It is 92,000,000 miles from the sun and goes about it in 365 days. But it does have a moon, of a nature that distinguishes none of its sister planets in precisely the same way.

This moon is only 238,800 miles away and its speed about the earth is 2,290 miles per hour. This is more than twice as fast as the earth is revolving, the earth's revolution being a trifle over 1,000 miles per hour.

The moon's diameter is 2,162 miles. In other words, it would take approximately 50 moons to make a planet of similar size to earth. Its density is only two-thirds that of the earth and since its gravity is only one-sixth, athletes on the moon could leap straight up thirty-six feet and broad-jump at least 150 feet.

The telescope reveals the moon as a vast crater-pitted, rocky desolation —a dead world—without atmosphere, water, or life. The side of the moon turned towards the sun is, due to lack of atmosphere, so cold

that rocks could not be touched without freezing human flesh, while on the side away from the sun, the temperature falls hundreds of degrees below zero and compares to the temperature in interstellar Space.

The question as to whether or not the moon was thrown out of that earth-cavity now filled by the Pacific Ocean, often teases the imaginations of the unlearned. Commonsense should dictate that such a thing could not have happened unless the earth had been in a gaseous state—or molten state—at the time. And if it had been in a gaseous or molten state, the centrifugal motion of the earth's mass remaining would have swiftly equalized this gouge from its volume and made the whole planet symmetrical but smaller.

As we shall see in Lectures which are yet to come, the Pacific Ocean cavity was more probably created by a gigantic cave-in of the land surface between California and Japan, submerging the whole antediluvian continent of Lemuria. But the submergence seems to have been gradual—the water creeping higher and higher up all the shorelines, year by year and generation by generation, so that no particular loss of life resulted as in Atlantis. The water is doing the same thing to the shores of the British Isles today. It is only a matter of arithmetic before the time comes when there will be no more England, Ireland, or Scotland. The British Isles will have disappeared beneath the surface of the North Atlantic.

MARS is the planet next outside the earth's orbit. It is 141,500,000 miles from the sun and has a day that is longer than ours by only a few minutes. It takes 687 of our days to make its year, however, though in size the planet is only about one-half the size of earth—4,200 miles in diameter, to the earth's 7,790. Although one-half the size of the earth, Mars is only one-ninth of its weight. The inequality of the seasons is such that the Martian winter lasts 381 days, and the summer only 306 days.

Another interesting point about Mars is, that the heat it receives from the sun is only about half of that received by the earth, yet its summer is so long in comparison with ours that it is sufficient to melt the Martian polar ice-cap.

In 1877, an astronomer named Echaiparelli startled the scientific world by declaring that he had discovered positive proof of intelligent life on Mars by reason of a series of canals, laid out in geometrical pattern and with engineering straightness. He claimed these canals must have been constructed to convey water from the polar seas to the planet's equatorial deserts. They varied in length, he estimated, from 250 to 4,000 miles, and in width from 12 to 200 miles. But the astronomer Pickering, who went to work on the problem, decided the strange geometrical markings were not canals but bands of vegetation, following the changing seasons.

There is no controversy, however, about the two moons of Mars. They are tiny moons, compared with our own, being about 20 miles in diameter, each. The inner moon, called Phobos, moves around Mars three times while the planet is turning but once. The other behaves pretty much like our own.

BETWEEN Mars and Jupiter, by the ratio of distances from planet to planet, exists a great blank of Space that previous to 1801 had puzzled astronomers. All the other interplanetary spaces seemed to have a fixed relationship, but the gap between Mars and Jupiter was twice what it should have been. What had happened to spoil the ratio in that particular area? Had there once been a planetary world there, which had disintegrated or been destroyed? If so, what had become of its materials? The Italian astronomer, Piazzi, after searching dilgently, finally discovered a small body in this gap that he gave the name of Ceres. But Ceres was evidently but a few hundred miles in diameter. What was such a pigmy world doing in a space so vast? Presently, however, a second baby planet was located in the gap, then a third and a fourth. Astronomers began to vie with each other in detecting pigmy planets between Mars and Jupiter. Today over a thousand of them are known and named. The largest is Vesta, yet Vesta is but 400 miles through its center.

This assembly of minute worlds is known as the Asteroids. We had them mentioned in our Fourth Lecture.

But here is the baffling thing about them—taken as a whole: Their mass just about equals such a planet as ought to be in that area which the Asteroids enjoy peculiarly to themselves.

What happened to produce these Asteroids? Had a planet even bigger than ours, met with some disaster and broken into fragments? If so, what had molded those fragments into spheres and sent them spinning in their own little orbits, each distinctive unto itself? Why should they not collide with one another again? And what took all of them, as a group, around the sun?

If these had been a series of sun-drops, spattered off in tiny particles, they should all be traveling in the direction of their first momentum. But they are not; many of them have eccentric orbits, spinning or traveling in such ways as they please. The explanation is not yet forthcoming from astronomy, although the accepted theory to account for them is, that the nearness of the great mass of Jupiter may have prevented the gaseous nebula in the gap from cohering into one respectable-sized planet.

Thus Jupiter, by such reasoning, would have to be the older planet and in existence when the Asteroids were in the nebulous state. Also, there is no accounting for Jupiter's size. It is the giant planet of our solar system. Its diameter at the equator is nearly 90,000 miles, and

its distance from pole to pole is over 84,000 miles. Its bulk is over 1300 times that of the earth, and it is located 483,000,000 miles from the sun—which means that a railroad train traveling 50 miles an hour would require nine centuries before its conductor could put its passengers off at the completion of such a run. Such a train would doubtless make but one run and then be sent to the junk-yard. If not, then it should be. Fancy one train nine hundred years old!

Yet despite its great size, Jupiter makes a complete revolution in 9 hours and 55 minutes, meaning that its true day is only about three hours long. On the other hand, though traveling about the sun at the rate of 28,743 miles an hour, it takes 12 of our years to complete one revolution.

This titanic planet is well supplied with moons, also, having no less than nine. One of them goes about Jupiter four times a week, the outermost one requires 18 days. Writers of love songs on Jupiter would have plenty of trouble with their moonlight, for if a young man asked his girl to come out with him for a stroll beneath the moon, she would ask him to supply his data as to which of the nine moons he meant—or did he mean all of 'em?

Jupiter, moons and all, is the brightest of all the planets in our system except Venus. It is five times as bright as Sirius, the most brilliant of the fixed stars, or outer suns.

When we get to the next planet, Saturn, we discover more eccentricities. Saturn is the one great planet which we can examine through the telescope, that is encircled by a plane-like band, resembling the brim of a gigantic straw hat. Saturn has a brilliance of a star or sun of the first magnitude, and its diameter is 73,000 miles—nine times as great as the earth's, yet not as big as Jupiter's by something like 17,000 miles. Its day is only about 10 hours long. And when it comes to moons, Saturn has so many of them—if we choose to call them moons—that they put the frill around her that makes her so distinctive.

NOW this great frill, or hat-brim crushed down around Saturn's equator, is something that we shall find referred to in a strange and enthralling way when we come to our Lecture: "Did the Oceans Once Whirl in the Skies?" The telescope reveals that this great fiery circle around Saturn is not fiery at all—at least it isn't gaseous—and it isn't one ring but a series of rings, all on the same plane, one inside the other, and the various rings are made up of different materials that are traveling at different speeds.

There are at least four of these rings: an outer ring, sometimes divided near its middle into two; an inner, broader, and brighter ring; and a dark inside ring that is sometimes called the Crepe Ring. These rings have a thickness of about a hundred miles. Recent observations have established that each ring is made up of millions of separate satellites moving around the planet, each at its own rate according to its specific gravity.

The innermost particles of the Crepe Ring, for instance, travel about Saturn in five hours. On the other hand, it takes the outer or "higher" ring something like 137 hours to make the circuit. I say that we shall come back to another discussion of Saturn. But these figures for the movement of the rings have significance.

In 1781, Sir William Herschel discovered the planet Uranus, before then unsuspected. The naked eye can barely discern it. It is 1,800,-000,000 miles from the sun and requires 84 of our years to travel its orbit. Imagine living on a planet where the summers were 21 of our years, long! It is only four times the size of our earth, and one-third the size of Jupiter or Saturn.

In 1846, the eighth and last planet in our solar system was discovered—Neptune, nearly three billion miles from the sun, with a year equal to 164 of our solar years. In size it seems to compare with Uranus. The sun itself, about which this planet travels every 164 years, must appear to a person dwelling upon it, as a mere distant star.

Whether there are still more planets to our system beyond Neptune, we do not know at present.

We are safe in stating, however, that our solar system is contained within the orbit of Neptune, and the seven celestial bodies named are all of the planetary bodies that exist within that unthinkable space-area.

You recall my statement in our last Lecture: that the extent to which

solar space is populated is equal to twenty tennis balls floating around inside a glass globe as big as our earth. If we think that this s true of the bodies within Neptune's orbit, "We ain't heard nothin' yet!"

In passing out beyond Neptune to the untold millions of stars and suns, we reach a group of bodies—not dark like the planets and moons—but incandescent in their own rights. Some of these, the "dwarf suns," are smaller than Old Sol. Most of them, the "giant suns," are so big by comparison that the sun we know is lost among them and becomes a well-nigh insignificant star that astronomers in those distant solar systems—if there be such astronomers—consider about as important as our earthly astronomers consider the smaller of the asteroids. Remember I am dealing in suns and solar systems now, not the planet's that are their satellites. I said suns, and I mean suns. When you get a sun as big, or bigger, than the whole orbit of Neptune, you are getting a sun that you can begin to call important. Then when you begin to consider a mere half-billion of them—and I said billion, not million!—you are beginning to get a faint idea of the immensity of the universe in comparison with thus puny little solar system, and puny little sun, and puny little satellite planet with its one puny little moon, within which we dwell and think pretty fine.

In comparison we can barely recognize the sun at all in the great galactic system, so small and insignificant is it. As for its third planet, Earth, it can only be located as a dust mote in the vast universe because it is moving around a ninth-rate sun.

How it was even discovered as an abiding place for later sentient life, is one of those mysteries of divine arithmetic that should give us pause.

¶ Incidentally, when thinking for the moment in such concepts, doesn't it hand us a laugh, to be told seriously by theologians that the whole works came into being some 4,000 years ago, and that the tribal totem-god of a group of Semitic Midianites was responsible for it, and that this god often took time out from the business of conducting a project so titanic, and counselled those Midianite shepherds when they went to war with their enemies, even on one occasion being reputed to have caused the entire proposition to halt its motion while a group of them under Joshua finished a battle in order that a strip of earthly real estate, 75 miles wide and 193 miles long, might be seized, looted, and subjugated by his human favorites?

What a silliness!

What a silliness to even think that ours is the only solar system and

planetary body that contains sentient mortal life as we have come to know it!

There must be millions of universes like ours, with billions of trillions of self-aware beings—many of them with faculties developed so far beyond ours as to make our own as rudimentary and insignificant as our sun is rudimentary and insignificant among the colossi of the Milky Way.

We shall come to more comprehensive treatment of this question of human life on other celestial bodies, farther on in these Lectures.

IT is a fact to note here, however, that apparently all these bodies, considered as to the matter of their movement, are following one standard pattern.

I spoke farther back of the aspects of the universe resembling a cluster of billiard-balls eternally rising and falling, like the balls in the hands of some omnipotent juggler. I used that analogy to get the picture-image into your minds of the fact that the universe was not "going anywhere" because there was nowhere to go—that it was simply hung in pure Space and all of its movement was confined within itself, that is, that all its movement was confined to the balls in relation to one another.

This standard pattern, considered from the structural angle, is "Centrosome and encircling satellite or satellites. By Centrosome—and you want to note that word because I shall use it much as we proceed—is meant the central body or mass of such a pattern or system.

Around the Centrosome, or central body or mass of such pattern or system, move its attendant satellite bodies in their various orbits.

Each set or assembly of these constitutes a Celestial Unit.

Furthermore, the pattern keeps on maintaining such assembly, in that such a celestial unit swings in turn around some other greater Centrosome or core, and this of itself makes up another and grander unit. So units still greater and grander are recognized unto infinite organization.

It would be well for you to keep constantly in mind that our sun, surrounded by its encircling planets, is likewise moving as a centrosome through Space, and yet—wise as modern scientists consider themselves—they have not yet determined positively what heavenly body our sun's centrosome is.

Alcyone has been conjectured as this central core of our solar unit. But there is as yet no reliable evidence to support the idea.

We do know that our sun is moving—with its family group of planets as described—toward the star-sun Lyra at the rate of about 12 miles every second, but the sun's year, so to speak, is so immense as to time that human life on the earth has not yet been able to observe what its duration may be. What seems to be a movement toward Lyra may be only movement in an orbit around Lyra.

Observations by Herschel, however—as I mentioned some time back—showed two great tidal waves of the star-suns, one widely scattered group moving radially—as from the center of a circle toward its circumference—from the constellation Hercules, and another group toward the opposite side of the stellar sphere. The goal of this latter group, among which our sun has location, is over in the constellation Lyra. The other group tends toward a point halfway between Sirius and Canopus.

After thousands of years, the sun's motion will alter the position of many stars, as well as the tidal sweep of the stars themselves.

The picture of the universe—or at least our particular area of it—supplied by such findings, is of two vast star streams, drifting through each other, interpenetrating as they go.

THIS is apparently all the elementary data on the composition of the celestial system that we need for the moment. It gives you a rough design of the universe in which you find yourself dwelling—enhoused in a physical vehicle called your body, moving about upon the surface of the minor satellite of a very minor sun-star that in its turn is a mote in a unit of other sun-stars conjectured as swinging about Alcyone.

If you want the picture of your true condition in Cosmos, think of this minor satellite—or earth-planet—whisked out from beneath your feet, disintegrated, or vanished, and you as a sentient soul remaining behind and taking the place of such minor satellite. Suspended in eternal void, you find yourself a spectator-consciousness in a stupendous spherical field of pin-point lights. Over vast periods of time you note that these pin-point lights seem to have shifted positions. Particularly the great sun-star light that is biggest to you in this spherical space—old Sol—seems to alter its position most noticeably. Thereby it finally dawns upon you that it is yourself that is moving in relaton to this assemblage of pin-point lights. But you have small sense of motion because these pin-point incandescent objects are too far

away. You are seemingly suspended in the vast spherical area and your almost infinitesimal movement is only that of a squirrel going around and around in the wheel of its cage. In a half-million years of "age" you have simply passed the same point in Space a half-million times.

You cry to yourself: "But am I never to get anywhere?"

And mayhap some celestial conversationalist responds: "But where is there to get?" The distant pin-points of light move, but after a time they all appear to have moved back into their original positions, whereat they start making the kaleidoscopic change all over again. ℂ You are suspended in great blue-black, star-pricked space, and there apparently Eternity abandons you.

What do you do with yourself to endure the tedium of it?

Well, you turn your thinking inward upon the essence and nature of your own being, and observe yourself to yourself for what you are, that you may recognize yourself as being anything or anywhere at all! ℂ So then, insofar as your pin-point-of-light environment is concerned, the next question we want to take up is: How did these materials come into existence for you to put your feet upon, and proceed to play out the drama of conscious and physically-enhoused life?

Which brings us automatically to a consideration of Energy.

ENERGY, as we commonly employ the term, might be defined as that eccentric capability which attaches to either an object or a spatial area, to alter either the position or condition of itself in relation to other objects or other conditions. This alteration may be seemingly self-motivated, or externally supplied. Neither alters the nature of Energy itself. We in our three-dimensional world insist that Energy shall be supplied FROM somewhere. We simply cannot conceive of Energy existing of itself. If we want Energy supplied to the wheel of a printing press to turn the press over and produce this pamphlet, we belt the press up to a motor. Energy comes into this motor in the form of power through an electric conduit. But we trace back the power and arrive at the dynamo in the city's electric system. We go hunting for what makes the dynamo supply such current, and we arrive at the steam turbine taking Energy from heat-units in coal that is burned, or we arrive at some great water-power system where gravity pulls millions of tons of water per minute through turbines again, and its "weight" turns them over. So to work

our printing press, we have merely harnessed gravity at its source. ◖ On the other hand, we quit printing this monograph and go to the ball game. The pitcher propels the ball to the batter. The ball travels from the pitcher's box to the batter's plate and we say that it has energy behind it, or more properly, IN it. If it lacked such Energy, it would stop in mid air, there would be no clouts of it that brought home runs, hence no ball game, and everybody would go home. But in this case the Energy has been supplied by the pitcher's physical arm. And his arm has manufactured Energy in turn from the metabolism of his bodily organs. So we have the "burning coal" process in another form. But behind such Energy, controlling and directing it, not to mention projecting it, is Mind, the pitcher's Mind, suddenly deciding to throw the ball and—throwing it!

Here, we might express it, is an Original Source.

Mind has functioned and gotten alteration in the location of objects or status of conditions.

Now then, hold tight and try to grasp this—

Suppose that the "mental impulse" expressed in the pitcher's behavior encompassed not the area of Space expressed by the dimensions of the pitcher's skull-case but the area of Space expressed by the dimensions of Herschel's watch-shaped galactic universe. And suppose one step further that instead of the pitcher throwing the ball by means of his arm, objectively, he threw it "mentally" inside his own brain-mind, subjectively, and that the pitcher was Holy Spirit and the thrown baseball was the universe that It had created!

That, you might say, would be abolishing materials as we know them —whether composing either baseball or sun-planets—and doing the whole thing "in Thought" or "merely thinking that it happened." Nevertheless, Energy would be present in both manifestations and would be getting results after its nature and purpose. We concede constantly that there is such a thing as "mental energy" quite as much as we acknowledge the thing called "physical energy."

So we can declare this axiom: That Mind, in the process of exercising subjectively to get mental energy, or exercising objectively to get physical energy, gives the effect of motivation, and proceeds to the manufacture of some sort of appreciable result!

Our next step in logic therefore gives us this: That where there is appreciable result from motivation, there is proven automatically the existence of Mind!

The Metaphysician conveniently parrots the term Divine Mind to

describe this pitcher's skull-case-area together with the activity encompassing Herschel's watch-shaped galactic system. Holy Spirit is another convenient label. Scientists talk about the First Cause.

Where we contend all are making their mistakes is in thinking or specifying that there is any particular "divine" Mind, or "holy" Spirit, or "first" Cause. There is but Mind, Spirit, and Cause, and ALL of them are divine, holy, and original. Furthermore, there is none of it apart from our spiritual or essential selves, except as to manner or eccentricity of function. And we arrive at this conclusion, not by a study of the galactic system but a study of the Atom.

The atoms composing Betelguese and the atoms composing ourselves are identical in nature, composition, and behavior. Therefore the same Mind Performance must be considered as behind, and in, and of, both!

Nowhere in all the galactic system, or systems, that we penetrate, do we find Matter or Substance compiled in any different aspect or pattern than we find it in the physical or sensory equipment of our infinitesimally-small selves.

Now many people are puzzled as to the difference between atoms and molecules. Let's set ourselves straight on these two terms—

A molecule is the smallest division of a substance, where any further division would cause it to cease being a substance. Thus a piece of rock salt can be broken up repeatedly, or powdered to infinite fineness, yet each fragment will still be salt. When we reach particles so small that any further pulverizing will cause the particles to cease being salt, we have reached the molecules of salt.

The smallness of true molecules can be grasped when we again use the globe of the earth for our standard. If a single drop of water were magnified till it was as big as the earth, each molecule in it would be about the size of the brass knob on the post of your bed.

An atom is the unit that goes to make up the nature of the molecule, thereby identifying the substance composing it. If the molecule contains only one kind of an atom, the substance is defined as a chemical Element. Where the atoms within a molecule differ, the substance is called a chemical Compound.

It was once taught that somewhere about 80 elements had distinct and unique atoms, incapable of being broken up into any more basic substance. The idea has been abandoned.

The Atoms of all matter consist of etheric impulses of positive and negative electricity.

The charge of positive electricity is the centrosome or core and is called the Proton.
The charge of negative electricity is the satellite or planet and is called the Electron.
The mass, or inertia, of the electron-negative-satellite in the simplest atom known—that of hydrogen—to its proton-positive-centrosome is one 1845th.
In other words, the proton-positive-centrosome, or sun, of the hydrogen atom, weighs one thousand eight hundred and forty-five times as much as the single electron-negative-satellite flying around it.
"An Atom," says Millikan, "consists of a heavy core or nucleus of one or more free protons, about which are grouped enough electrons to render the atom stable," that is, to give it unit-balance.
The atom of hydrogen contains one proton; outside the nucleus is one electron, to balance or "neutralize" the proton. The result is a world system—an atom of hydrogen.
If our sun, to illustrate, had but one planet revolving about it instead of eight, it would be a mere hydrogen atom in the great Cosmic Chemistry.
The heaviest known element is uranium. Generally speaking, its nucleus contains 384 protons, or suns, and its satellite system 384 electrons or planets. Remove even one proton from the nucleus and it is no longer an atom of uranium. Remove ten protons and you have an atom of lead. Remove thirteen and you have an atom of gold. And so on down—through the whole long list of metallic materials.
Magnify the nucleus of an atom one billion times, however, and it would still be too small to be discerned through the highest-powered microscope. Magnify it three billion times and the electrons are now three feet from the centrosome, but the nucleus itself is still smaller than a pin-point.
And the electrons flying about it are even one 1845th of that!
Matter then, is divisible into electrons and protons. But between electrons and protons are spaces so vast, in comparison to masses of each, that if the proton in the carbon atom were designated as to size by a walnut hanging down in the center of the great train-concourse at Pennsylvania Station in New York, its electrons would be represented by six wasps winging in a little knot against the four far walls of the structure.
All Matter then, is only a form of Energy.
There is no final solidarity of substance to anything: all that exists is

Energy! And this means what it says. Betelguese or the paper on which this Lecture has been printed, mountains and cabbages, airplanes and smoking tobacco, George Washington and the Rock of Gibraltar—all are, or have been, constructed of the one thing: Energy!

To put it in another way: The universe consists of Emptiness, charged with electrical energy!

Our finite minds demand: Was it created, or has it always existed? If it was created, who created it?

The scientist says that there is no scientific data available as to how Energy began. To cover himself and whitewash his confinement of activity to the strictly material, or Results of Energy, he adds: "It is probably permanently unknowable." Maybe so! But this is not the monograph that pursues the bedevilment to its lair. We want to know at this stage how the planets may have come into being. . . .

WE might put it this way—

As balanced atoms came into existence from such positive and negative compilations of primordial Energy as we have had described—from 1 centrosome and 1 satellite to 384 suns and 384 satellites—they behaved after a natural pattern to one another in the vast concoctions of free Space. What this natural pattern may have been, or still is, we must take up in our monograph: Did the Oceans Once Whirl in the Skies?

But relationships of mass to distance in the various coagulations of primordial energy-display, projected knots in ether wherein quantities of ALL the assortments of atoms became isolated.

In such isolations they behaved toward each other after the nature of their numerical significances—or numbers of protons and electrons involved in the 384 combinations.

What we call planets, for human occupation and employments of free Spirit Particles known as men and women—and even animal life—are the coagulated demonstrations of these combinations, getting results according to the influences exerted by other great planetary bodies adjacent to them in Space.

The celestial bodies came into existence where there was space enough, and primordial energy enough in such Space, for them to function after their pattern as planetary forms.

Let us attack this mighty problem in our next Discourse, and see if we cannot render it simpler, by considering precisely what must have been the processes achieved by Eternal Energy in that otherwise unoccupied Space existent in the solar system between Venus and Mars. In other words, let us consider a practical operation of Energy in projecting the planet Earth!